AMENDMENTS TO THE CLAIMS

1-30. **(Cancelled)**

31. **(New)** A data prereading device comprising:

a command history information storage unit operable to hold historic information of read commands which are received from a host device as information for reading data recorded on a disk memory medium;

a continuity detection unit operable to detect a direction along which prereading of data is to be performed based on the read commands held in said command history information storage unit;

a prereading area decision unit operable to decide the position and size of data on the disk memory medium to be preread based on the read commands held in said command history information storage unit and the data prereading direction detected by said continuity detection unit;

a cache memory operable to hold preread data;

a prereading startup unit operable to read, from the disk memory medium, the data to be preread which said prereading area decision unit decided is to be preread, and to store the preread data in said cache memory;

a cache memory pointer holding unit operable to hold an under-transfer address indicating the position, on said cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored; and

a prereading startup judgement unit operable to judge whether or not prereading of data is to be performed so as to leave at least several blocks of data which have already been transferred to the host device on the cache memory by employing the under-transfer address and the next preread data storage start address held by said cache memory pointer holding unit.

32.   (New) A data prereading device comprising:

a command history information storage unit operable to hold historic information of read commands which are received from a host device as information for reading data recorded on a disk memory medium;

a continuity detection unit operable to detect an area-to-area distance which is an interval of data to be preread based on the read commands held in said command history information storage unit;

a prereading rule holding unit operable to hold a plurality of prereading rules for performing prereading of data;

a prereading rule decision unit operable to decide a prereading rule to be used for prereading of data based on the read commands held in said command history information storage unit, the area-to-area distance detected by said continuity detection unit, and the plurality of prereading rules held by said prereading rule holding unit;

a prereading area decision unit operable to decide the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said prereading rule decision unit has decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said prereading rule decision unit, and the prereading directions of the prereading rule decided by said prereading rule decision unit and the previous prereading rule are the same;

a cache memory operable to hold preread data; and

a prereading startup unit operable to read, from the disk memory medium, the data to be preread which said prereading rule area decision unit decided is to be preread, and to store the preread data into said cache memory.

33.   (New) A data prereading device according to claim 32, further comprising:

a cache memory pointer holding unit operable to hold an under-transfer address indicating the position, on said cache memory, of data which is currently being transferred to the host

device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored; and

a prereading startup judgement unit operable to judge whether or not prereading of data is to be performed so as to leave at least several blocks of data which have already been transferred to the host device on the cache memory by employing the under-transfer address and the next preread data storage start address held by said cache memory pointer holding unit.

34.   (New) A data prereading device according to claim 32, wherein said prereading startup unit is operable to control preread data to be stored on the cache memory in the backward direction successively in front of preread data in the forward direction.

35.   (New) A data prereading device comprising:

a command history information storage unit operable to hold historic information of read commands which are received from a host device as information for reading data recorded on a disk memory medium;

a continuity detection unit operable to detect a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on the read commands held in said command history information storage unit;

a prereading rule holding unit operable to hold a plurality of prereading rules for performing prereading of data;

a prereading rule decision unit operable to decide a prereading rule to be used for prereading of data based on the read commands held in said command history information storage unit, the data prereading direction and the area-to-area distance detected by said continuity detection unit, and the plurality of prereading rules held by said prereading rule holding unit;

a prereading area decision unit operable to decide the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said prereading rule decision unit has decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said prereading rule decision

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unit, and the prereading directions of the prereading rule decided by said prereading rule decision unit and the previous prereading rule are the same;

a cache memory operable to hold preread data; and

a prereading startup unit operable to read, from the disk memory medium, the data to be preread which said prereading rule area decision unit decided is to be preread, and to store the preread data into said cache memory.

36. **(New)** A data prereading device according to claim 35, further comprising:

a cache memory pointer holding unit operable to hold an under-transfer address indicating the position, on said cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored; and

a prereading startup judgement unit operable to judge whether or not prereading of data is to be performed so as to leave at least several blocks of data which have already been transferred to the host device on the cache memory by employing the under-transfer address and the next preread data storage start address held by said cache memory pointer holding unit.

37. **(New)** A data prereading device according to claim 35, wherein said prereading startup unit is operable to control preread data to be stored on the cache memory in the backward direction successively in front of preread data in the forward direction.

38. **(New)** A data prereading method comprising:

detecting a direction along which prereading of data is to be performed based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding the position and size of data on the disk memory medium to be preread based on the received read commands and the data prereading direction detected in said detecting of the direction along with prereading of data is to be performed; and

reading, from the disk memory medium, the data to be preread decided in said deciding of the position and size of the data to be preread, and storing the preread data in a cache memory which is a storage area for the preread data; and

judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

39.   (New) A data prereading method comprising:

detecting an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the area-to-area distance detected in said detecting of the area-to-area distance, and prereading rules held by a prereading rule holding unit which holds a plurality of prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said deciding of the prereading rule decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said deciding of the prereading rule, and the prereading directions of the prereading rule decided by said prereading of the decision rule and the previous prereading rule are the same; and

reading, from the disk memory medium, the data to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which holds the preread data.

40.   (New) A data prereading method according to claim 39, further comprising:

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judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

41. **(New)** A data prereading method according to claim 39, wherein said judging of whether or not prereading of data is to be performed stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

42. **(New)** A data prereading method comprising:

detecting a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the data prereading direction and the area-to-area distance detected in said detecting of the direction along which prereading of data is to be performed and the area-to-area distance, and prereading rules held by a prereading rule holding unit which holds a plurality of prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said deciding of the prereading rule decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said deciding of the prereading rule, and the prereading directions of the prereading rule decided by said prereading of the decision rule and the previous prereading rule are the same; and

reading, from the disk memory medium, the data to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which holds the preread data.

43. **(New)** A data prereading method according to claim 42, further comprising:

judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

44. **(New)** A data prereading method according to claim 42, wherein said judging of whether or not prereading of data is to be performed stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

45. **(New)** A computer-readable recording medium on which a program for making a computer execute a data prereading method is recorded, said data prereading method comprising:

detecting a direction along which prereading of data is to be performed based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding the position and size of data on the disk memory medium to be preread based on the received read commands and the data prereading direction detected in said detecting of the direction along with prereading of data is to be performed; and

reading, from the disk memory medium, the data to be preread decided in said deciding of the position and size of the data to be preread, and storing the preread data in a cache memory which is a storage area for the preread data; and

judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by

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employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

46. **(New)** A computer-readable recording medium on which a program for making a computer execute a data prereading method is recorded, said data prereading method comprising:

detecting an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the area-to-area distance detected in said detecting of the area-to-area distance, and prereading rules held by a prereading rule holding unit which holds a plurality of prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said deciding of the prereading rule decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said deciding of the prereading rule, and the prereading directions of the prereading rule decided by said prereading of the decision rule and the previous prereading rule are the same; and

reading, from the disk memory medium, the data to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which holds the preread data.

47. **(New)** A recording medium according to claim 46, on which a program for making a computer execute a data prereading method is recorded, wherein said data prereading method further comprises:

judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by

employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

48.   (New) A recording medium according to claim 46, on which a program for making a computer execute a data prereading method is recorded, wherein said judging of whether or not prereading of data is to be performed stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

49.   (New) A computer-readable recording medium on which a program for making a computer execute a data prereading method is recorded, said data prereading method comprising:

detecting a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the data prereading direction and the area-to-area distance detected in said detecting of the direction along which prereading of data is to be performed and the area-to-area distance, and prereading rules held by a prereading rule holding unit which holds a plurality of prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread by employing two prereading rules in combination when said deciding of the prereading rule decided a prereading rule and a previous prereading rule has been employed immediately before the prereading rule decided by said deciding of the prereading rule, and the prereading directions of the prereading rule decided by said prereading of the decision rule and the previous prereading rule are the same; and

reading, from the disk memory medium, the data to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which holds the preread data.

50.   (New) A recording medium according to claim 49, on which a program for making a computer execute a data prereading method is recorded, wherein said data prereading method further comprises:

judging whether or not prereading of data is to be performed so as to leave at least several blocks of data on the cache memory which have already been transferred to the host device by employing an under-transfer address indicating the position, on the cache memory, of data which is currently being transferred to the host device, and a next preread data storage start address indicating the position on the cache memory where next preread data is to be stored.

51.   (New) A recording medium according to claim 49, on which a program for making a computer execute a data prereading method is recorded, wherein said judging of whether or not prereading of data is to be performed stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

52.   (New) A disk memory device comprising:

a command history information storage unit operable to hold historic information of read commands which are received from a host device as information for reading data recorded on a disk memory medium;

a continuity detection unit operable to detect a direction along which prereading of data is to be performed based on the read commands held in said command history information storage unit;

a prereading area decision unit operable to decide the position and size of data on the disk memory medium to be preread based on the read commands held in said command history

information storage unit and the data prereading direction detected by said continuity detection unit;

a cache memory operable to hold preread data; and

a prereading startup unit operable to read, from the disk memory medium, the data to be preread which said prereading area decision unit decided is to be preread, and to store the preread data in said cache memory;

wherein said prereading startup unit is operable to control preread data to be stored on the cache memory in the backward direction successively in front of preread data in the forward direction.

53.   (New) A disk memory device comprising:

a command history information storage unit operable to hold historic information of read commands which are received from a host device as information for reading data recorded on a disk memory medium;

a continuity detection unit operable to detect a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on the read commands held in said command history information storage unit;

a prereading rule holding unit operable to hold prereading rules for performing prereading of data;

a prereading rule decision unit operable to decide a prereading rule to be used for prereading of data based on the read commands held in said command history information storage unit, the data prereading direction and the area-to-area distance detected by said continuity detection unit, and the prereading rules held by said prereading rule holding unit;

a prereading area decision unit operable to decide the position and size of data on the disk memory medium to be preread based on the prereading rule decided by said prereading rule decision unit;

a cache memory operable to hold preread data; and

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a prereading startup unit operable to read, from the disk memory medium, the data to be preread which said prereading area decision unit decided is to be preread, and to store the data into said cache memory;

wherein said prereading startup unit is operable to control preread data to be stored on the cache memory in the backward direction successively in front of preread data in the forward direction.

54.   **(New)** A data prereading method comprising:

detecting a direction along which prereading of data is to be performed based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding the position and size of data on the disk memory medium to be preread based on the received read commands and the data prereading direction detected in said detecting of the direction along with prereading of data is to be performed; and

reading, from the disk memory medium, the data to be preread decided in said deciding of the position and size of the data to be preread, and storing the preread data in a cache memory which is a storage area for the preread data;

wherein said reading of the data stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

55.   **(New)** A data prereading method comprising:

detecting a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the data prereading direction and the area-to-area distance detected in said detecting of the direction along which prereading of data is to be performed and the area-to-area distance,

and prereading rules held by a prereading rule holding unit which holds prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread based on the prereading rule to be used for prereading of data decided in said deciding of the prereading rule; and

reading the data on the disk memory medium to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which is a storage area for the preread data;

wherein said reading of the data stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

56.	(New) A computer-readable recording medium on which a program for making a computer execute a data prereading method is recorded, said data prereading method comprising:

detecting a direction along which prereading of data is to be performed based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding the position and size of data on the disk memory medium to be preread based on the received read commands and the data prereading direction detected in said detecting of the direction along with prereading of data is to be performed; and

reading, from the disk memory medium, the data to be preread decided in said deciding of the position and size of the data to be preread, and storing the preread data in a cache memory which is a storage area for the preread data;

wherein said reading of the data stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.

57.	(New) A computer-readable recording medium on which a program for making a computer execute a data prereading method is recorded, said data prereading method comprising:

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detecting a direction along which prereading of data is to be performed and an area-to-area distance which is an interval of data to be preread based on read commands which are received from a host device as information for reading data recorded on a disk memory medium;

deciding a prereading rule to be used for prereading of data based on the received read commands, the data prereading direction and the area-to-area distance detected in said detecting of the direction along which prereading of data is to be performed and the area-to-area distance, and prereading rules held by a prereading rule holding unit which holds prereading rules for performing prereading of data;

deciding the position and size of data on the disk memory medium to be preread based on the prereading rule to be used for prereading of data decided in said deciding of the prereading rule; and

reading the data on the disk memory medium to be preread corresponding to the position and size decided in said deciding of the position and size of the data, and storing the preread data into a cache memory which is a storage area for the preread data;

wherein said reading of the data stores preread data on the cache memory in the backward direction successively in front of preread data in the forward direction.